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(24)

Groundwater Monitoring Plan For Organic Chemicals (AB 1803) In San Fernando Basin Including The Cities Of Los Angeles, Burbank & Glendale

Prepared For

California State Department Of Health Services

Prepared By

Department of Water and Power

Water Quality Division

City Of Los Angeles

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Groundwater Monitoring Plan For Organic Chemicals (AB1803) In San Fernando Basin

Summary

This plan is submitted in accordance with the State requirements for organic chemical monitoring of the groundwater sources under the Assembly Bill No. 1803 (AB1803) as requested by the State Department of Health Services (DOHS). The subject plan covers the San Fernando Basin in which the Los Angeles Department of Water and Power (LADWP) and the Cities of Burbank and Glendale have adjudicated allotment of groundwater.

Based upon the hydrogeological considerations, about 29% of the production wells in the basin (26 wells) were selected to be monitored for organic chemicals.

This corresponds to about 29% of LADWP wells (21/72 X 100 = 29), 20% of the Burbank Wells (2/10 X 100 = 20), and 33% of the Glendale Wells (3/9 X 100 = 33).

In determining the organic analysis to be conductd on the selected wells, such parameters as the proximity of potential sources of contamination (i.e., industrial, commercial, agricultural, landfills, etc.) and the direction of groundwater flow were considered. The analysis of water samples will be performed according to the established USEPA protocols.

DETAILS OF MONITORING PLAN

1. BACKGROUND

1.1. San Fernando Valley Basin

The San Fernando Valley Basin (SFVB) is encompassed within a region known as the Upper Los Angeles River Area (ULARA), which consists of the entire watershed of the Los Angeles River (LAR) and its several tributaries above a point along the LAR near its junction with the Arroyo Seco Flood Control Channel. The ULARA is comprised of a total of 328,500 acres, of which 122,800 acres are alluvial valley fill deposits and 205,700 acres are hills and mountains. The area is bounded on the north and northwest by the Santa Susana Mountains, on the northeast by the San Gabriel Mountains, on the east by the San Rafael Hills, on the west by the Simi Hills, and on the south by the Santa Monica Mountains.

The 122,800 acres of valley fill include four distinct groundwater basins which are separated by restrictions to groundwater flow. These basins are replenished by a combination of local and imported surface recharge waters and subsurface inflow. The four groundwater basins are the San Fernando, Sylmar, Verdugo and Eagle Rock Basins. (Figure 1)

The San Fernando Basin is by far the largest. It consists of 112,000 acres, or 91.2 percent of the total valley fill, and has an estimated total groundwater storage capacity of 3,200,000 acre-feet. The volume of usable stored groundwater in the San Fernando Basin is estimated to be approximately 1,000,000 acre-feet.

Groundwater extractions from the basin are important water supplies for the cities of Los Angeles, Burbank, Glendale, San Fernando and the La Crescenta area of the County of Los Angeles.

This plan of organic monitoring of groundwater will cover the San Fernando Basin. The monitoring plans for other basins will be presented later. Figure 2 shows the location of wells within the San Fernando Basin along with the groundwater contours and the commercial/industrial development and agricultural areas.

1.1.1 San Fernando Basin

The presented organic monitoring plan covers the entire San Fernando Basin, in which the Cities of Los Angeles, Burbank and Glendale have the right to extract groundwater from the basin. Information regarding the water systems of the above mentioned Cities are presented below according to the format proposed by the California State Department of Health Services.

A. City of Los Angeles

1) Name and address of Water System:
Los Angeles Department of Water and Power
111 North Hope Street, Room A-18,
Los Angeles, Ca 90051

2) System Number: Water Supply Permit No. 19-067 (6-14-68)

3) County: Los Angeles

4) Number of service connection as of 12/31/83: 63,700

B. City of Burbank

1) Name and address of Water system: City of Burbank, Public Service Department

2) System Number: 19-179

3) County: Los Angeles

4) Number of service connection as of 12/31/83: 26,062

C. City of Glendale

1) Name and address of water system: City of Glendale
Public Service Department
119 North Glendale Avenue
Glendale, CA 91206 - 4496

2) System number: 19-043

3) Number of service connection as of 12/31/83: 31,439

2. POTENTIAL SOURCES OF GROUNDWATER CONTAMINATION BY ORGANIC CHEMICALS

2.1 Introduction

The purpose of investigating the potential sources of organic contamination was to examine the impact of these sources on the quality of groundwater in the basin. In this investigation all potential sources of groundwater contamination were considered. These sources include: (1) industrial and commercial establishments; (2) agricultural areas; (3) unsewered areas and private disposal systems; and (4) landfills.

2.1.1. Industrial Sources

Studies regarding the types and quantities of hazardous materials and the industrial users within the monitoring area have been conducted in the past (Groundwater Quality Management Plan, San Fernando Valley Basin, LADWP, 1983 and SCS Engineers, 1982). The objectives of these studies were to evaluate the current industrial practices for the handling, storage and disposal of hazardous waste materials. Results indicated that at present PCE and other solvents are used in industrial applications. Also, results

showed that, in general, current hazardous materials management are adequate among most large commercial and industrial establishments. For the purpose of AB 1803 monitoring plan Figures 2-5 were developed based upon the information obtained from the Public Works records, Department of Planning, City of Los Angeles. In these Figures the industrial/commercial and residential zoning within the study area have been identified. The information obtained from these figures were utilized to determine the organic analyses to be carried out on the selected wells.

2.1.2 Agricultural Areas

Figure 2 shows the areas in San Fernando Valley, used for agricultural activities. Most of the indicated areas are used as nurseries. For the purpose of this study, nurseries with 10 acres or more under cultivation were considered. Although current agricultural practices in the study area are not significant, wells downgradient of these areas which might have been affected by the past activities will be analyzed for pesticide/herbicide contamination. These chemicals include D-D Mixture (1,2-Dichloropropane; 1,3-Dichloropropane and Trichloropropanes), DBCP (Nemagon), Methyl Bromide, Chloropierin, Diazinon, Carbaryl, Atrazine, Simazine (Princep), and Diuron (Karmex). Most of the agricultural areas are located in northern and western parts of the basin. There has not been any appreciable agricultural land use in the cities of Burbank and Glendale in the past forty years. Since herbicides may have been used on spreading grounds for weed control purposes, wells located downgradient of these areas will also be analyzed for these chemicals. According to the DOHS, all the selected wells should be analyzed for Atrazine and Simazine, two commonly used herbicides in the area. Information on agriultural and nursery areas were obtained from the California Department of Health Services.

2.1.3 Unsewered Areas and Private Disposal Systems

A comprehensive search of public records revealed that a number of commercial and industrial properties in the North Hollywood area still utilize private disposal system, such as septic tanks, for their wastewater disposal. Based upon the information obtained from the public works records, Department of Planning, City of Los Angeles, Figure 6 was developed. Wells located in the immediate vicinity of these areas will be monitored for organic chemicals. Investigation of these areas in the Cities of Burbank and Glendale indicated that with the exception of a few scattered unsewered residential properties, the entire Cities are connected to sewer systems.

2.1.4 Landfills

The investigation of sanitary landfills consisted of a review of available information on the siting, design, classification and use of active and completed landfills as sources of groundwater contamination in the San Fernando Basin. Figure 7 shows the location of the sites identified in the study area. In this figure the status of these landfills is shown by different colors.

A list of these landfills including their locations is also provided (Appendix 1). The waste classifications of old landfills and dumps were estimated based upon observations noted in DWP files. Most previously completed landfills have little or no provisions for groundwater protection or monitoring. The production wells located downgradient of the landfills will be monitored for organics contamination.

3. SELECTION OF WELLS FOR ORGANIC MONITORING PLAN

Production Wells were selected from the Water Systems operated by the Cities of Los Angeles, Burbank and Glendale located in the San Fernando Basin.

Based upon such considerations as the common source of groundwater and wells area of influence about 29% of the wells representing the groundwater quality of the San Fernando Basin were selected for the subject plan. Wells in the San Fernando Basin are fed from the same groundwater source (aquifer). Well selection was made in such a way that two successive pumping wells have overlaping area of influence (cone of depression). Therefore, if a plume of contamination exists between the two wells it could be picked up by either well. For this reason, wells located between the two selected wells were not chosen since the selected wells are believed to present a similar water quality. Well selection was also considered on the basis of perforation levels. Most of the selected wells have a high perforation level. Depending upon the proximity of the wells to the various potential sources of contamination, analysis of particular organic chemicals will be conducted on the selected representative wells.

The well field areas in the San Fernando Basin in this plan are contained within the Cities of Los Angeles, Burbank and Glendale. A discussion of the number of wells selected for this AB 1803 plan in each of the cities is contained in the following sections:

3.1. City of Los Angeles

3.1.1. North Hollywood Well Field

This well field contains production wells of North Hollywood, Erwin, Whitnall and Verdugo (Figure 3). Currently 59 production wells in the area are operational. From this well field the following wells have been selected for the monitoring program:

Well Field	Selected Well No.	Total No. of Wells in the well field
N. Hollywood	7,4,36,26,2,30,14A 13, 39, 27, 18,21	35
Whitnall	2,6	10
Erwin	5	7
Verdugo	16,4	8
TOTAL:	17	60
% Selected Well = 17/60 x 100 = 28		

From the listed above wells, 17 wells were selected for the monitoring program.

The 17 selected wells will constitute 28% of the total wells in the area to be monitored for organic contamination.

3.1.2 Headworks, Crystal Springs and Pollock Well Fields

These well fields contain 12 operational wells. (Figures 4,5). From these fields the following wells were selected for the monitoring program.

Well Field	Selected Well No.	Total No. of Wells in the well field
Headworks	27, 30	6
Crystal Sprgs	46	3
Pollock	6	3
TOTAL:	4	12
% Selected Well = 4/12 x 100 = 33		

3.2. Burbank Wells

Total number of production wells in the City of Burbank is 9, of which 5 are operational (Figure 3).

Two wells were selected for the organic monitoring program.

Well Field	Selected Well No.	Total No. of Wells in the well field
PSD	10,12	10
TOTAL:	2	10
% Selected Well = 2/10 X 100 = 20		

3.3. Glendale Wells (Grandview Well Field)

Total number of operational wells of Glendale in the San Fernando Basin (Grandview system) is 9 (Figure 4). Three wells from this system were selected for the monitoring program.

Well Field	Selected Well No.	Total No. of Wells in the well field
Grandview	6,13,14	9
TOTAL:	3	9
% Selected Well = 3/9 X 100 = 33		

Table 1 summarizes the selected wells of the cities of Los Angeles, Burbank and Glendale for this AB1803 organic monitoring plan. Organic analyses to be conducted on the selected wells are listed in Table 2. Well Construction data for the production wells in the San Fernando Basin is presented in Appendix 2.

Table 1. Selected Wells of San Fernando Basin for the Organic Monitoring Plan (AB 1803).

Water Agency	Selected Wells	Wells not to be Sampled	% Well Selected
Los Angeles DWP	North Hollywood: 7,4,36,26, 2,30,14A,13, 39,27,18,21 Whitnall: 2,6 Erwin: 5 Verdugo: 16,4 Headworks: 27,30 Crystal Springs: 46, Pollock: 6	North Hollywood: 32,33,25,15,34, 37,22,23,24 31,42,43A,41,40,38, 29,28,11,17,16,19 35,20 Whitnall: 1,3,4,5,7,8,9,10 Erwin: 10,6,4,2A,1,3, Verdugo: 1,2,11,13,24,22 Headworks: 25,26,28,29 Crystal Springs: 45,50 Pollock: 4,7	
Subtotal	21	51	29
City of Burbank	PSD 10,12	PSD 6A,7,11A,13A, 14A,15,17,18	
Subtotal	2	8	20
City of Glendale	Glendale: 6,13,14	Glendale: 1,2,11,12,15, 16	
Subtotal	3	6	33
Total	26	65	29

Table 2. Organic Analyses to be Conducted on the selected wells of San Fernando Basin

Water Agency	ORGANIC ANALYSIS			
Selected Well	Volatile Halocarbons (VOA)	Volatile Aromatics	Base/Neutrals, Acid Extractables	Pesticides/Herbicides
LADWP				
North Hollywood:				
7	x	x	-	x
4	x	x	x	x
36	x	x	x	x
26	x	x	x	x
2	x	x	x	x
14A	x	x	x	*
13	x	x	x	*
39	x	x	x	*
27	x	x	x	*
18	x	x	x	*
21	x	x	x	*
Whitnall:				
2	x	x	-	x
6	x	x	x	*
Erwin:				
5	x	x	-	*
Verdugo:				
16	x	x	x	*
4	x	x	-	*
Headworks:				
27	x	x	-	*
30	x	x	-	*
Crystal Springs				
46	x	x	x	*
Pollock				
6	x	x	x	*
City of Burbank				
PSD-10	x	x	x	x
PSD-12	x	x	x	x
City of Glendale				
G-6	x	x	x	x
G-13	x	x	x	x
G-14	x	x	x	x
TOTAL:	25	25	19	11
% Well sampled	100	100	73	44

*The well will be analyzed for Atrazine and Simazine.

4. SAMPLE COLLECTION

Groundwater samples will be collected by a well trained, experienced water operator from the Operation Section of the LADWP Water Quality Division. All recommended precautions outlined in Section 5 of this report will be implemented in the sampling process.

5. SAMPLING, PRESERVATION, AND STORAGE CONDITIONS FOR THE ANALYSIS OF ORGANIC MATERIALS REQUIRED FOR AB 1803 (1)

5.1. Sample Container

The following criteria should be met:

1. Non-purgeable samples (i.e., Base/Neutral and Acid Extractables, Organochlorine Pesticides and PCBs, etc.) must be collected in amber glass containers in a liter or quart volume.

2. Container caps should be threaded to screw onto the container. Caps must be lines with Teflon. Foil may be substituted if sample is not corrosive.

3. Purgeable samples must be collected in 40 mL borosilicate glass vials with screw caps (Pierce #13075 or equivalent). The septum used must be Teflon-faced silicon (Pierce #12722 or equivalent).

5.2. Pretreatment of container

1. Wash bottles with hot water and detergent

2. Rinse thoroughly with tap water followed by three or more rinses with organic-free water.

3. Rinse with interference-free redistilled solvent such as acetone or hexane and dry in contaminant-free air at room temperature. Protect from any sources of contamination. Caps and liners for bottles must also be solvent-rinsed as above.

or

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(1) Source: Recommended methods of analysis for the organic components required for AB1803, California State Department of Health Services.

Heat glassware for 15 to 30 minutes at 400° C (750° F) and caps and liners for 1 hour at 105° C (220° F).

5.3. Sampling procedure

A. Purgeables

Collect samples in 40 mL glass vials. The procedure for filling and sealing sample containers is as follows: Slowly fill each container to overflowing. Carefully set the container on a level surface. Place the septum, teflon side down, on the convex surface of the sample meniscus. Seal the sample with the screw cap. To ensure that the sample has been properly sealed, invert the sample and lightly tap the lid on a solid surface. The absence of entrapped air bubbles indicates a proper seal. If air bubbles are present, open the bottle, add additional sample, and reseal in same manner as stated above. Maintain samples 4° C (39° F) during transport and storage prior to analysis.

Sample is to be taken from a tap at the well head prior to any treatment or storage. The well must be pumped for at least 15 minutes before sampling.

Open the sampling tap and allow the water to run until the temperature is stable. Adjust the flow to about 500-mL/minute and collect samples as outlined above.

B. Non-purgeables

Collect samples in liter or quart volume bottles. Fill bottle so that head space is no greater than the threaded portion of the neck. Cap bottle with lined teflon cap. Samples must be refrigerated at 4° C from the time of collection until extraction.

5.4. Sample Preservation and Storage

A. Purgeable Halocarbons

The samples must be iced or refrigerated at 4° C from the time of collection until extraction.

All samples must be analyzed within 14 days of collection.

B. Purgeable Aromatic

Collect about 500 mL sample as described under Sampling Procedure -- Purgeables.

The samples must be iced or refrigerated at 4° C from the time of collection until extraction.

All samples must be analyzed within 14 days of collection.

C. Organochlorine Pesticides and PCBs

The samples must be iced or refrigerated at 4° C from the time of collection until extraction. If the samples will not be extracted within 72 hours of collection, the sample should be adjusted to pH range of 5.0-9.0 with sodium hydroxide or sulfuric acid.

All samples must be extracted within seven days and completely analyzed within 40 days of extraction.

D. Purgeables (GC/MS)

The sample must be iced or refrigerated at 4° C from the time of collection until extraction. If the sample contains residual chlorine, add sodium thiosulfate preservative (10 mg/40 ml is sufficient for up to 5 ppm Cl) to the empty sample bottles just prior to shipping to the sample site, fill with sample just to overflowing, seal the bottle, and shake vigorously for one minute.

Experimental evidence indicates that some aromatic compounds, notably benzene, toluene, and ethylbenzene are susceptible to rapid biological degradation under certain environmental conditions. For this reason, a separate sample should be collected, acidified, and analyzed when these aromatics are to be determined. Collect about 500 mL of sample in a clean container. Adjust the pH of the sample to about 2 by adding HCl (1 + 1) while stirring. Fill a sample container as described under Sampling Procedure -- Purgeables.

All samples must be analyzed within 14 days of collection.

Base/Neutrals, Acids and Pesticides (GC/MS)

The samples must be iced or refrigerated at 4° C from the time of collection until extraction. The sample must be protected from light.

All samples must be extracted within seven days and completely analyzed within 40 days of extraction.

E. Agricultural Chemicals and Pesticides

The sampling, preservation, and storage conditions for agricultural chemicals and pesticides shall be the same as those described for non-purgeables with the exception of Aldicarb and D-D mixture.

F. Aldicarb

The sample shall be collected in 1 liter plastic containers and shall be kept frozen until analysis is conducted.

G. D-D Mixture

The sample, preservation, and storage conditions shall be the same as those described for purgeables.

6. LABORATORY ANALYSIS

The analysis of groundwater samples collected from the selected representative wells of the basin will be conducted at the Los Angeles DWP labortory. This laboratory is equipped and certified to perform all the organic analyses except Carbarly and Diuron (Karmex) required for AB 1803 monitoring plan. These chemicals will be analyzed by J.M. Montgomery laboratory at Pasadena, California.

Appendixes

APPENDIX 1. LANDFILLS AND DUMP SITES IN THE SAN FERNANDO VALLEY

DESIGNATION*	SITE IDENTIFICATION	LOCATION	WASTE CLASSIFICATION	STATUS	OWNER/OPERATOR
006	Burbank Reclamation Project	1801 North Bell Aire Dr.	2	Active	City of Burbank
010	Lopez Canyon Landfill	North of Van Nuys Blvd.	2	Active	Los Angeles
011	Sheldon-Arleta	8700 Arleta Avenue	2	Inactive	Los Angeles
012	Toyon-Griffith Park	Griffith Park Drive	2	Active	Los Angeles
014	Griffith Park Landfill	---	U	Planned	Los Angeles
027	Scholl Canyon Landfill	7546 North Figueroa St.	2	Active	LACSD
063	Aqua Vista Debris Disposal	Acama Street	3	Active	LACFCD
066	Brown Debris Disposal	DeSoto Avenue	3	Active	LACFCD
068	Dunsmuir Debris Disposal	5100 Dunsmore Avenue	3	Active	LACFCD
069	Eagle Debris Disposal	Harmony Place	3	Active	LACFCD
075	LaTuna Debris Disposal	8900 LaTuna Canyon Road	3	Active	LACFCD
079	May Debris Disposal	Barner Avenue	3	Active	LACFCD
082	Shields Debris Disposal	LaCrescenta Avenue	3	Active	LACFCD
085	Wilbur Debris Disposal	Nordhoff Street	3	Active	LACFCD
087	Zachau Debris Disposal	Seven Hills Drive	3	Active	LACFCD
088	Ward Debris Disposal	Markridge Road	3	Active	LACFCD
093	Brand Canyon Debris Disposal	Brand Park Reservoir	3	Active	LACFCD
096	Deer Debris Disposal	Beudry Boulevard	3	Active	LACFCD
103	North Valley Refuse Center	14747 San Fernando Road	2	Active	North Valley Land Dev. Corp.
104	Bradley Pit Landfill	9351 Tujunga Avenue	2	Active	Conrock

LANDFILLS AND DUMP SITES (Continued)

DESIGNATION*	SITE IDENTIFICATION	LOCATION	WASTE CLASSIFICATION	STATUS	OWNER/OPERATOR
105	Livingston-Graham Landfill	11670 Wicks Street	2	Planned	Livingston-Graham Corp.
106	Hewitt Pit	7245 Laurel Canyon Blvd.	2	Inactive	Valley Reclamation
107	Penrose Pit	8251 Tujunga Avenue	2	Inactive	L.A. By-Products
133	Universal City Studios Landfill	100 Universal City Plaza	2	Active	Universal City Studios
134	Pendleton Street Dump	11251 Pendleton Street	2	Inactive	California Materials Co.
141	Kagel Canyon Landfill	--	2	Planned	--
147	Morman Canyon	Easterly of Brown Canyon and Morman Canyon	U	Planned	--
282	Pendleton Street Landfill	11000 Pendleton Street	3	Active	DWP
283	Valley Steam Plant Landfill	9430 San Fernando Road	3	Active	DWP
310	Brand Park Disposal Site L.F.	North of Childs Canyon Debris Basin	3	Active	Glendale
315	Lower Sunset Debris Disposal	Lower Sunset Debris Basin	3	Active	LACFCD
639	--	Bluffside Dr.-Willowcrest	3	Inactive	Los Angeles
643	Grand Central Airport Dump	1101 Airway	U	Inactive	Glendale
644	Kellogg Avenue Dump	630 Kellogg Avenue	U	Inactive	Glendale
645	E. L. Flemming Dump	W. of 5431 San Fernando Rd.	U	Inactive	Glendale
646	Colorado Boulevard Dump	500 Feet West of	2	Inactive	Glendale
695	Valley Brick Dump	6151 Kester Avenue	2	Inactive	Valley Brick & Supply Co.
696	L.A. City Department of Public Works	15145 Oxnard Avenue	2	Inactive	Los Angeles
698	Unknown	--	U	—	—

LANDFILLS AND DUMP SITES (Continued)

DESIGNATION*	SITE IDENTIFICATION	LOCATION	WASTE CLASSIFICATION	STATUS	OWNER/OPERATOR
700	Valley Transfer Station	9501 San Fernando Rd.	2	Inactive	
701	Branford Street Dump	Branford Street at San Fernando Road	2	Inactive	
703	Cal-Mat Dump	9228 Tujunga Avenue	2	Inactive	California Materials Co.
704	Akmadzich Dump	11201 Randall Street	3	Inactive	P. J. Akmadzich
705	Strathern Landfill	8001 Fair Avenue	2	Proposed	L.A. By-Products
706	Tuxford Pit	8501 Tujunga Avenue	2	Inactive	L.A. By-Products
707	L.A. By-Products	Victory Boulevard at Vineland Avenue	3	Inactive	L.A. By-Products
708	Lockheed Aircraft	1705 Victory Boulevard	U	Inactive	Lockheed Aircraft
709	Benz Dump	11666 Pendleton Street	3	Inactive	Valley Iron & Metal Co.
710	DeGarmo Pit	9135 DeGarmo Avenue	2	Active	L.A. By-Products
711	Wicks Place Dump	Wicks Street at Glenoaks	2	Inactive	(See #104)
712	Kittridge Dump	11400 Kittridge Street	U	Inactive	Unknown
713	Newberry Pit (Razarian Dump)	8250 Tujunga Avenue	2	Inactive	L.A. By-Products
714	Bradley Pit	9050 Bradley Avenue	U	Inactive	California Materials Co.
720	Morris Pit Dump	9116 Norris Avenue	2	Inactive	Valley Iron & Metal Co.
721	Valley Iron & Metal Dump	Pendleton Street (North of Glenoaks Blvd)	2	Inactive	Valley Iron & Metal Co.
722	--	12800 Oxnard Street	2	Inactive	Ludvig Grudt and
723	Bright Realty Dump	Laurel Canyon at Jerome	U	Inactive	Bright Realty Co.
724	Tujunga at Peoria Dump	--	2	Inactive	California Materials Co.

LANDFILLS AND DUMP SITES (Continued)

DESIGNATION*	SITE IDENTIFICATION	LOCATION	WASTE CLASSIFICATION	STATUS	OWNER/OPERATOR
745	L.A. City Department of Public Works	Zelzah Avenue at Lerdo Ave.	2	Inactive	Los Angeles
746	San Fernando City Dump	Sharp Avenue at Paxton St.	2	Inactive	City of San Fernando
747	Ledger Dump No. 2	Glenoaks Blvd at Montoque St.	2	Inactive	Robert Ledger
752	Russell Moe Dump	Lopez Canyon Road	2	Inactive	Russell Moe Inc.

*Corresponds with County Engineer's Office designation as shown on

WASTE CLASSIFICATION as defined in the California Administrative Code.

1 - Toxic substances and substances which could significantly impair the quality of usable waters.

2 - Chemically or biologically decomposable materials which do not include hazardous substances nor those capable of significantly impairing the quality of usable waters.

3 - Nonwater soluble, nondecomposable inert solids.

U - Unknown

Appendix 2

AB 1803 Preliminary Evaluation

Page 1

Name of Water Utility: Los Angeles Department of Water and Power

System No.: Water Supply Permit No. 19-067 (6-14-68)

County: Los Angeles County

No. of Services as of 12/31/82: 637,000

No. of Operational Groundwater Sources: 71 Wells (SFB)

Well Construction Data

Well No. (or name)	State Well No.	Year Drilled	Depth of A. Seal	Casing Depth	Highest Perf. Level	Gravel Pack (Yes or No)	Capacity (gpm)	Do We Have Log?
NH-32	1N/15W-02Q02	1963	N/A *	734'	264'	No	1376	Yes
NH-7	1N/15W-02Q01	1924	N/A	595'	151'	No	1620	Yes
NH-33	1N/15W-02E02	1963	N/A	787'	274'	No	2125	Yes
NH-4	1N/15W-02R01	1924	N/A	594'	195'	No	1430	Yes
NH-25	1N/15W-01P04	1958	N/A	570'	160'	No	2769	Yes
NH-15	1N/15W-01K01	1926	N/A	446'	260'	No	2213	Yes
NH-34	1N/15W-01K02	1964	N/A	760'	202'	No	2288	Yes
NH-37	1N/15W-01K05	1968	N/A	944'	250'	No	3318	Yes
NH-36	1N/15W-01K04	1967	N/A	806'	265'	No	3388	Yes
NH-22	1N/15W-01Q02	1948	N/A	494'	166'	No	2268	Yes
NH-26	1N/15W-01Q04	1959	N/A	596'	220'	No	2643	Yes
NH-23	1N/15W-01Q03	1951	N/A	480'	222'	No	2970	Yes
NH-30	1N/14W-06N02	1962	N/A	758'	255'	No	2334	Yes
NH-2	1N/14W-06N01	1924	N/A	414'	110'	No	2368	Yes
NH-24	1N/14W-06L01	1954	N/A	554'	206'	No	2719	Yes
NH-31	1N/14W-06P02	1963	N/A	682'	205'	No	2743	Yes
NH-14A	1N/14W-06Q02	1947	N/A	418'	120'	No	2242	Yes
NH-29	1N/14W-06Q05	1962	N/A	716'	215'	No	2782	Yes
NH-13	1N/14W-06Q01	1925	N/A	453'	198'	No	1851	Yes

* Information Not Available

Include all operational and standby wells (write standby).

NOTE: Try to obtain all missing well logs, especially for wells drilled in the past few years.

Name of Water Utility: Los Angeles Department of Water and Power
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No. of Operational Groundwater Sources: 71 Wells (SFB)

Well Construction Data

Well No. (or name)	State Well No.	Year Drilled	Depth of A. Seal	Casing Depth	Highest Perf. Level	Gravel Pack (Yes or No)	Capacity (gpm)	Do We Have Log?
NH-42	1N/14W-06K04	1970	N/A *	738'	280'	No	3103	Yes
NH-41	1N/14W-06K03	1970	N/A	640'	248'	No	3837	Yes
NH-40	1N/14W-06K02	1970	N/A	865'	308'	No	3318	Yes
NH-39	1N/14W-06K01	1969	N/A	855'	300'	No	3670	Yes
NH-38	1N/14W-06Q07	1968	N/A	824'	300'	No	3765	Yes
NH-11	1N/14W-06R01	1925	N/A	495'	212'	No	2030	Yes
NH-28	1N/14W-06R07	1961-2	N/A	810'	250'	No	3279	Yes
NH-27	1N/14W-06R05	1959	N/A	780'	210'	No	1783	Yes
NH-16	1N/14W-05N01	1929	N/A	446'	144'	No	2597	Yes
NH-17	1N/14W-05P02	1929	N/A	456'	145'	No	2799	Yes
NH-18	1N/14W-05P01	1929	N/A	471'	145'	No	4876	Yes
NH-19	1N/14W-08B01	1929-30	N/A	419'	145'	No	3289	Yes
NH-35	1N/14W-17Q02	1967	N/A	714'	260'	No	1674	Yes
NH-20	1N/14W-08A02	1930	N/A	455'	146'	No	2325	Yes
NH-21	1N/14W-08A01	1930	N/A	509'	149'	No	2422	Yes
E-10	1N/14W-07J01	1953	N/A	632'	204'	No	1355	Yes
E-6	1N/14W-07J03	1955	N/A	716'	212'	No	1767	Yes
E-4	1N/14W-08L02	1953	N/A	540'	207'	No	1419	Yes
E-2A	1N/14W-08P03	1980	N/A	531'	205'	No	1658	Yes

* Information Not Available
Include all operational and standby wells (write standby).
NOTE: Try to obtain all missing well logs, especially for wells drilled in the past few years.

Name of Water Utility: Los Angeles Department of Water and Power
System No.: Water Supply Permit No. 19-067 (6-14-68)
County: Los Angeles County
No. of Services as of 12/31/82: 637,000
No. of Operational Groundwater Sources: 71 Wells (SFB)

Well Construction Data

Well No. (or name)	State Well No.	Year Drilled	Depth of A. Seal	Casing Depth	Highest Perf. Level	Gravel Pack (Yes or No)	Capacity (gpm)	Do We Have Log?
E-1	1N/14W-08J04	1955	N/A *	834'	205'	No	2220	Yes
E-3	1N/14W-08J03	1955	N/A	814'	354'	No	1726	Yes
E-5	1N/14W-08J01	1953	N/A	544'	230'	No	2307	Yes
W-1	1N/14W-07A01	1951	N/A	512'	150'	No	2650	Yes
W-2	1N/14W-08D01	1951	N/A	484'	162'	No	2884	Yes
W-3	1N/14W-08E01	1951	N/A	471'	170'	No	2307	Yes
W-4	1N/14W-08F01	1951	N/A	528'	150'	No	2670	Yes
W-5	1N/14W-08L01	1952	N/A	516'	150'	No	1757	Yes
W-6	1N/14W-08K01	1951	N/A	488'	194'	No	2479	Yes
W-7	1N/14W-08R01	1951	N/A	884'	253'	No	1809	Yes
W-8	1N/14W-17A01	1951	N/A	494'	224'	No	2773	Yes
W-9	1N/14W-16D01	1951-2	N/A	464	184'	No	1500	Yes
W-10	1N/14W-16E01	1951	N/A	524'	310'	No	829	Yes
V-1	1N/14W-22C01	1949	N/A	596'	128'	No	1374	Yes
V-2	1N/14W-15N01	1948	N/A	588'	112'	No	826	Yes
V-4	1N/14W-15P01	1949	N/A	586'	192'	No	1451	Yes
V-11	1N/14W-22B01	1948	N/A	504'	182'	No	2315	Yes
V-13	1N/14W-21B01	1949	N/A	527'	226'	No	541	Yes
V-16	1N/14W-21C01	1948	N/A	526'	127'	No	1534	Yes

* Information Not Available
Include all operational and standby wells (write standby).
NOTE: Try to obtain all missing well logs, especially for wells drilled in the past few years.

Name of Water Utility: Los Angeles Department of Water and Power
System No.: Water Supply Permit No. 19-067 (6-14-68)
County: Los Angeles County
No. of Services as of 12/31/82: 637,000
No. of Operational Groundwater Sources: 71 Wells (SFB)

Well Construction Data

Well No. (or name)	State Well No.	Year Drilled	Depth of Casing A. Seal	Depth	Highest Perf. Level	Gravel Pack (Yes or No)	Capacity (gpm)	Do We Have Log?
V-22	1N/14W-21H01	1948	N/A *	462'	170'	No	370	Yes
V-24	1N/14W-21G01	1949	N/A	490'	242'	No	1821	Yes
HW-25	1N/14W-24E06	1956	N/A	341'	105'	No	2903	Yes
HW-26	1N/14W-24D03	1956	N/A	355'	105'	No	2008	Yes
HW-27	1N/14W-24D04	1956	N/A	433'	104'	No	2812	Yes
HW-28	1N/14W-24D06	1966-7	N/A	456'	238'	No	3565	Yes
HW-29	1N/14W-23A05	1968	N/A	495'	235'	No	3571	Yes
HW-30	1N/14W-23A07	1978	N/A	455'	165'	No	4251	Yes
CS-45	1N/13W-19F02	1927	N/A	339'	50'	No	1353	Yes
CS-46	1N/13W-19F03	1927	N/A	310'	150'	No	2412	Yes
CS-50	1N/13W-19K02	1956	N/A	329'	106'	No	2486	Yes
P-4	1S/13W-04L02	1957	N/A	243	58'	No	745	Yes
P-6	1S/13W-04L03	1958	N/A	266'	100'	No	1849	Yes
P-7	1S/13W-04K01	1958	N/A	232'	66'	No	1208	Yes

* Information Not Available
Include all operational and standby wells (write standby).
NOTE: Try to obtain all missing well logs, especially for wells drilled in the past few years.

Name of Water Utility: City of Glendale
System No.: 19-043
County: Los Angeles
No. of Services as of 12/31/82: 31,439
No. of Operational Groundwater Sources: 12

Well Construction Data

Well No. (or name)	State Well No.	Year Drilled	Depth of Casing A. Seal	Depth of Casing Depth	Highest Perf. Level	Gravel Pack (Yes or No)	Capacity (gpm)	Do We Have Log?
GRANDVIEW #1	19-01797	1916	None Shown	500'	112'	No	1795	Yes
" #2	19-01798	1916	" "	500'	112'	No	1800	Yes
" #6	19-01804	1923	" "	504'	87'	No	2000	Yes
" #11	19-01808	1929	" "	640'	312'	No	2225	Yes
" #12	19-01809	1929	" "	534'	155'	No	2300	Yes
" #13	19-01810	1953	593'	606'	153'	No	2250	Yes
" #14	19-01811	1954	540'	619'	151'	No	2650	Yes
" #15	19-01799	1961	493.5	500'	258'	No	1750	Yes
" #16	19-01801	1964	546	551'	264'	No	2300	Yes
Glorietta #3	19-01800	1928	*173	180'	40'	No	1000	Yes
Glorietta #4	19-01802	1928	*185	189'	40'	No	750	Yes
Glorietta #6	19-01805	1946	*182	184	50'	No	1000	Yes

* = Bedrock
** = Note : Gorietta Wells No's 3, 4 & 6 are in the Verdugo Basin.

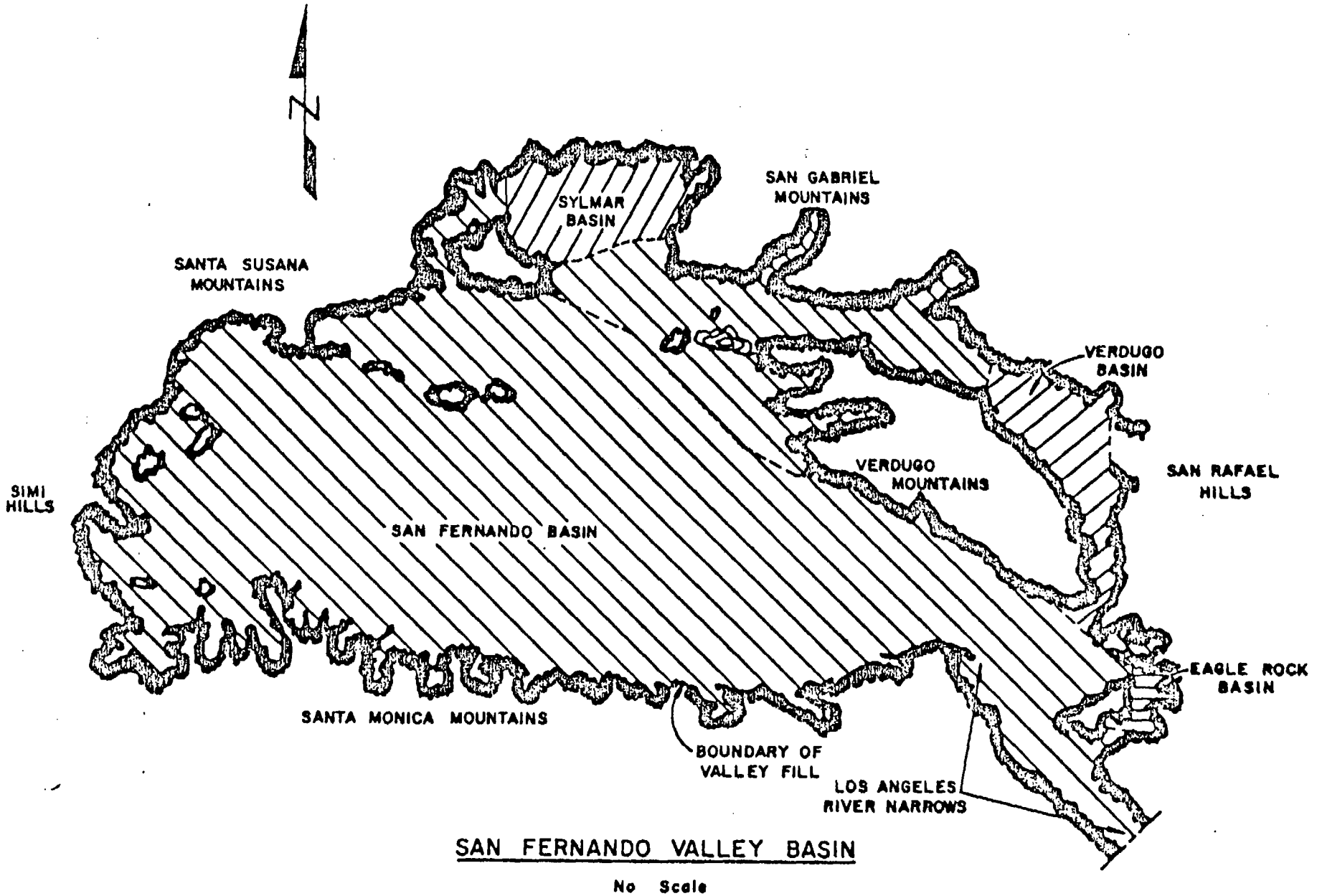
* Information Not Available
Include all operational and standby wells (write standby).
NOTE: Try to obtain all missing well logs, especially for wells drilled in the past few years.

Name of Water Utility: City of Burbank, Public Service Department
System No.: 19-179
County: Los Angeles
No. of Services as of 12/31/82: 26,062
No. of Operational Groundwater Sources: 10

Well Construction Data

Well No. (or name)	State Well No.	Year Drilled	Depth of A. Seal	Casing Depth	Highest Perf. Level	Gravel Pack (Yes or No)	Capacity (gpm)	Do We Have Log?
6A	IN/14W-09P01	1963	50'	900'±	410'	Yes	2530	Yes
7	IN/14W-11Q01	1938	None	632'	64'	No	554	Yes
10	IN/14W-09H03	1942	None	588'	153'	No	1523	Yes
11A	IN/14W-09H04	1964	50'	898'	300'	Yes	1849	Yes
12	IN/14W-09G02	1949	?	792'	177'	Yes	1902	Yes
13A	IN/14W-09K02	1969	50'	800'	300'	Yes	2139	Yes
14A	IN/14W-09A03	1967	50'	850'	300'	Yes	Out of Service	Yes
15	IN/14W-14B08	1950	?	456	271'	Yes	966	Yes
17	IN/14W-09B04	1956	None	798	274'	No	1572	Yes
18	IN/14W-09L04	1954	?	942	300'	Yes	1411	Yes

Include all operational and standby wells (write standby).
NOTE: Try to obtain all missing well logs, especially for wells drilled in the past few years.



SAN FERNANDO VALLEY BASIN

No Scale

FIGURE 1